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Letter to the Editor

Renal Artery Pseudoaneurysm Following Percutaneous Nephrolithotomy

To the Editor,

Percutaneous surgery has become the standard care of renal calculus disease. The most common complication is mild to moderate hematuria, of which renal artery pseudoaneurysm is a well-documented cause. We herewith report a case of post-percutaneous nephrolithotomy (PCNL) hematuria managed by selective embolization.

A 71-year-old male patient presented to us with history of bilateral loin pain and was diagnosed to have bilateral renal stone disease. He underwent left-sided PCNL and was discharged on the second post-operative day. He presented again on the fourth post-operative day with gross hematuria and was admitted in the hospital for further care. The blood hemoglobin (Hb) at admission was 15.8 g/dL. He was initially managed conservatively with bed rest and received transfusion of four units of packed red blood cells. The hematuria subsided initially but on the 11th post-operative day, he again had severe he-maturia. At this juncture, a renal angiogram was performed, which showed a large pseudoaneurysm measuring 3.8 cm, located in the left renal lower polar artery (Figure 1). Selective embolization of the pseudoaneurysm was performed with a 5-Fr Renegade microcatheter, 7-F renal guide catheter, mirage 0.008 wire by selectively entering into the aneurysm sac and embolized with 33% *N*-butyl-2-cyanoacrylate (NBCA). Total obliteration of the malformation was achieved (Figure 2). The post-embolization period was uneventful. Hematuria subsided and the patient was discharged on the 15th post-ope-

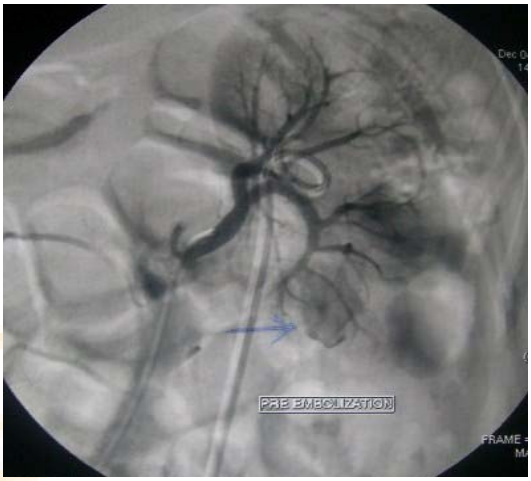

Figure 1. Left renal angiogram reveal large pseudoaneurysm from lower polar artery (arrow).

Figure 2. Left renal angiogram showed total obliteration of the malformation after selective embolization.

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rative day.

Arterial pseudoaneurysm arises from a transected or punctured artery that leaks into a contained hematoma cavity. This complication is likely to happen because of an artery transected partially or end-on during percutaneous nephrolithotomy puncture, which could subsequently bleed into a contained space. This bleeding vessel may be a third order branch of the renal artery, which is a deep, substantial artery branch. This transected arterial branch may be either partially thrombosed or in spasm initially, leading to its non-recognition in the operating room. As the patient increases his/her activity, the occluding clot may possibly get dislodged, accounting for the delayed occurrence of hematuria. Renal artery pseudoaneurysm has been previously reported in the literature in connection with open partial nephrectomy. In a series of 698 patients who underwent open partial nephrectomy, three (0.43%) had renal artery pseudoaneurysm.[1] These three patients also presented in a delayed fashion between five days and three months following surgery. Two of them were successfully managed by selective angiographic embolization, while in one other patient, the renal artery pseudoaneurysm resolved spontaneously.

Renal artery pseudoaneurysm is an uncommon complication following laparoscopic partial nephrectomy.[2] These patients often present in delayed fashion. Selective angiographic embolization is the initial treatment of choice.[2] The management of post-operative renal artery pseudoaneurysm requires a high index of suspicion and if the patient is on anti-platelet or anti-coagulation medicines, they should be discontinued.[3] Patients may present with delayed hemorrhage 1–2 weeks after minimally invasive kidney surgery with symptoms such as gross hematuria, flank pain or fever.[3]

Contrast-enhanced computerized tomography (CT) (with angiography) may be performed to confirm and assess the bleeding. If the patient remains hemodynamically stable on serial hematocrit assessments during a 48-hour observation period, he/she may be discharged from the hospital with advise for restricted activity, and close follow-up for two weeks is adequate.[2]

However, an ongoing need for transfusions or hemodynamic instability is an indication for angiographic embolization. However, identification of a specific bleeding site, such as a renal artery pseudoaneurysm or an arteriovenous malformation, requires selective embolization. This intervention has minimal morbidity, spares nephrons, avoids re-operative surgical intervention, which risks the possibility of requiring nephrectomy, and usually provides definitive therapy. Selective angiography and embolization together is the gold standard, both for diagnosis and treatment.[3,4]

Our case further suggests that renal artery pseudoaneurysm is an uncommon but potentially life-threatening complication. A high index of suspicion and an understanding of its typical clinical presentation will enable rapid diagnosis. Selective angiographic embolization is the initial treatment of choice.

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